# REMEDIAL ACTION WORK PLAN (LONG TERM GROUNDWATER MONITORING PLAN)

## EVERGREEN MANOR SITE
## ROSCOE TOWNSHIP, WINNEBAGO COUNTY, ILLINOIS

**AUGUST 2007**
**REF. NO. 034891 (9)**
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## 1.0 INTRODUCTION

On October 7, 2004, the United States Environmental Protection Agency (U.S. EPA) entered into an Administrative Order on Consent (AOC) with two Respondents to conduct a Remedial Design in accordance with U.S. EPA's Statement of Work (SOW) for the Evergreen Manor Site (Site) located in Winnebago County, Roscoe Township, Illinois. The Site was previously characterized as a groundwater contamination Site due to the presence of certain volatile organic compounds (VOCs) at concentrations that exceeded U.S. EPA's maximum contaminant levels (MCLs). As documented in the U.S. EPA-approved Remedial Design Report (CRA, 2006), a discernable groundwater contaminant plume (and therefore the site) no longer exists.

The character of the groundwater aquifer is conducive to the natural degradation of chlorinated solvents in situ. This natural degradation feature had been previously demonstrated by the results of a 2002 groundwater sampling event, in which only two compounds were detected at concentrations exceeding the MCLs at two separate locations sampled. Specifically, trichloroethene (TCE) was detected in monitoring well MW-03 at 7.2J[1] micrograms per liter (µg/L), and tetrachloroethene (PCE) was detected in monitoring well MW-103S at 5.9 µg/L. The MCL for both TCE and PCE is 5 µg/L.

Subsequent groundwater monitoring conducted in 2005 during the Remedial Design indicated that all of the groundwater constituents observed historically have attenuated naturally to below drinking water standards and confirm the temporal trend observed previously of declining VOC concentrations. Most significantly, the 2005 investigation demonstrated that the remedial action objectives set forth in the U.S. EPA September 30, 2003 Record of Decision (ROD) and October 7, 2004 AOC had been achieved. Nevertheless, in accordance with Item II Section 3 and Item III Section 2c of the SOW appended to the AOC, this Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) has been developed.

[1] As indicated by the July 2003 Groundwater Data Evaluation Report (GDER), "J" is defined as "the analyte was positively identified; the associated numerical value is an approximate concentration of the analyte in the sample". Stated differently, the reported concentration values for these analytes are approximate only.

## 2.0 SUMMARY OF SITE CONDITIONS

A description and the history of the Evergreen Manor Site were provided in Sections 2.1 and 2.2 of the U.S. EPA's September 30, 2003 ROD and Section 2.0 of the Remedial Design Report. The historic Site's geology and hydrogeology is summarized in Section 2.5.2 of the ROD and Section 3.0 of the Remedial Design Report.

The historical Site is located in unincorporated Roscoe Township in Winnebago County, Illinois, just north of Roscoe, Illinois (Figure 2.1). Roscoe is in north-central Illinois, about 10 miles north of Rockford, Illinois.

The historical Site extended from an industrial area near Route 251 and Rockton Road to about two miles southwest through the Hononegah Heights, Tresemer, Old Farm, and Evergreen Manor subdivisions. Between the industrial area and the residential area is about one mile of open farmland.

U.S. EPA completed the installation of a municipal water supply system in the subdivisions in 1999 to 2000. The May 1999 AOC Respondents were informed that the private wells at the homes were permanently sealed and can no longer be used for potable or non-potable purposes.

In 2005, in accordance with the 2004 AOC, the Respondents collected samples from all 24 existing monitoring wells along with collection of water level measurements at each well and six surface water points. In addition, based on an evaluation of the 2000 and 2002 groundwater analytical data, three areas that were assessed to yield the greatest potential likelihood of exhibiting elevated concentrations, if any, of parameters of concern were selected for comprehensive vertical aquifer screening. All monitoring wells, surface water points, and vertical aquifer screening locations were surveyed for vertical and horizontal control. The final data resulting from this program indicated that none of the samples exceeded MCLs.

## 3.0 MONITORING OBJECTIVES AND REQUIREMENTS

Groundwater monitoring in accordance with this Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) will occur at five monitoring wells: MW-01A, MW-03, MW-103S, MW-105S, and MW-105D. The primary objectives of this program are:

- to confirm an ongoing trend of declining concentrations over time as previously observed, and
- to confirm that monitored analytes are less than the Cleanup Standards for Groundwater established by the U.S. EPA (as set forth in Table 1 of the SOW), if observed above Practical Quantitation Limits ("PQL"). This will document that the remedy is protective of human health and the environment.

The groundwater monitoring will be conducted on a quarterly basis over a one year period to determine whether there are seasonal variations in the concentrations. A review of the data will be conducted following the four quarters of monitoring to evaluate a reduction in sampling frequency and the optimal timing for these events. Monitoring will then be continued at an agreed upon frequency until written notice from the U.S. EPA is received stating that monitoring is no longer necessary. At that time, the monitoring wells will be properly sealed in accordance with the procedures outlined in Section 7.0 of this document.

The specific requirements for sample collection and analysis are set out by the Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) provided as Appendices A and B, respectively, to the U.S. EPA-approved Remedial Design Work Plan, and attached hereto as Appendices A and B. Sample collection will be undertaken in accordance with the U.S. EPA-approved Site Health and Safety Plan (HASP) provided as Attachment C to the Remedial Design Work Plan, and attached hereto as Appendix C.

## 4.0 MONITORING PLAN

Groundwater samples will be collected from monitoring wells MW-01A, MW-03, MW-103S, MW-105S, and MW-105D using either a stainless steel electronic submersible pump or a stainless steel bladder pump. Each sample will be analyzed for the U.S. EPA Target Compound List (TCL) of VOCs as set forth in Table 2.2 of the QAPP. Figure 4.1 identifies the locations of the five monitoring wells relative to local surficial features and improvements.

In addition to the stabilization parameters of pH, conductivity, and temperature as outlined in Section 4.2 of the FSP (Appendix A), dissolved oxygen (DO) and oxidation-reduction potential (ORP) will also be monitored for stabilization (+/- five percent) prior to collecting the groundwater samples.

## 5.0 INSTITUTIONAL CONTROLS

As stated in the approved[2] Remedial Design Report (CRA, 2006), no samples exceed the U.S. EPA's MCLs. Moreover: 1) a definable groundwater plume and associated boundaries no longer exists; and 2) the groundwater to soil pathway is incomplete, making the vapor intrusion pathway not relevant to indoor air quality. In addition, no private potable supply wells are known to exist in the areas of historical groundwater impacts due to the provision of municipal water by the U.S. EPA. Nevertheless, the provisions outlined in the Communications Plan (CRA, 2004) will be maintained until the U.S. EPA determines that they are no longer necessary. Copies of all analytical data submittals and reports prepared and submitted to the U.S. EPA as part of this Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) will be forwarded to the following agencies:

- Illinois Environmental Protection Agency (Illinois EPA);
- Winnebago County Health Department (WCHD); and
- Winnebago County Regional Planning and Economic Development Department (WCRPEDD).

[2] By letter (William Ryan, U.S. EPA to Bruce Clegg, CRA) dated May 24, 2006.

## 6.0 SAMPLE COLLECTION POINT PLAN

Groundwater samples for this Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) will be collected from five monitoring wells: MW-01A, MW-03, MW-103S, MW-105S, and MW-105D. Figure 4.1 shows the locations of the five monitoring wells.

## 7.0 MONITORING WELL MAINTENANCE REPAIR/REPLACEMENT AND ABANDONMENT PLAN

During every Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) sampling round, MW-01A, MW-03, MW-103S, MW-105S, and MW-105D will be inspected. The lock, outer protective steel casing, and inner well casing will be inspected for evidence of damage. The depth of each well will be measured and compared with the previous year's measurement to check for any appreciable evidence of sediment build-up at the bottom of the well, indicating the need for well redevelopment. The monitoring well inspection information will be recorded in the Site field notebook, or alternatively on a well inspection form/checklist.

Based on the field observations, the need for monitoring well repairs or replacement will be determined. In the event that well repairs and/or well abandonment and replacement are necessary, the U.S. EPA will be notified within 15 calendar days of the discovery of the well damage. A work plan for the repairs/replacement will be developed for review and approval by the U.S. EPA prior to completing the repairs/replacement. Implementation of the monitoring well repair or replacement will occur within 15 calendar days of receipt of U.S. EPA's written approval of the work plan for repairs/replacement or within an alternative timeframe approved by U.S. EPA. Monitoring wells that are repaired or replaced will be resurveyed for horizontal and vertical control by an Illinois-licensed surveyor and, if needed, will be redeveloped to ensure good communication with the surrounding aquifer.

Monitoring wells damaged beyond repair will be properly sealed. In addition, all of the monitoring wells will eventually be properly sealed at the conclusion of the monitoring period, when the monitoring wells are no longer needed. Sealing of monitoring wells will be conducted in accordance with Section 920.120 of the Illinois Water Well Construction Code (Title 77 of the Illinois Administrative Code, Part 920), using the following procedures:

- The protective steel outer casing will be removed;
- The inner monitoring well casing will be removed to a minimum depth of 2-feet below the ground surface;
- The monitoring well will be sealed using bentonite grout installed from the bottom of the well up to 2-feet below the ground surface using a tremie pipe; and
- The remaining 2-feet up to the ground surface will be backfilled with soil.

The required well sealing forms will be completed and submitted to the Winnebago County Health Department within 30 days following the sealing activities.

## 8.0 CONTINGENCY ACTION PLAN

In the event that any monitoring samples exceed U.S. EPA standards for groundwater as identified in Table 1 of the SOW, the U.S. EPA will be notified and the monitoring well(s) will be resampled within 45 days of completion of the sampling event to confirm the concentration of the analyte. Should this confirmation sample exceed the cleanup standard, a proposal for implementing a contingency plan will be sent to the U.S. EPA within 30 calendar days of completion of the confirmation sampling event. Additional remedial actions may include expanding the monitoring well network, increasing the monitoring frequency, or a combination of these intended to evaluate the nature of the contaminant concentration and protect human health and the environment. The development of a final contingency action and an assessment of the potential value of such action will be based on the historic monitoring data and potential receptors. Final implementation and scheduling of the contingency plan would occur following approval by the U.S. EPA.

## 9.0 DATA REPORTING AND SCHEDULE

The results of each sampling event will be provided to the U.S. EPA within 45 calendar days of the completion of the sampling event. The analytical data will include the raw analytical data, a data validation memorandum, and a synopsis of the validated data, including summary tables. The analytical data will be provided in hard copy and in an electronic format that is compatible with the U.S. EPA database.

Annual monitoring reports in accordance with the Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) will provide the following information:

- a summary of the tasks performed during the previous year;
- the analytical results provided by the project laboratory of the last sampling event of the year, provided in hard copy and in an electronic format that is compatible with the U.S. EPA Region 5 database format;
- a data validation memorandum for the provided analytical data;
- a synopsis of the validated data collected during the year;
- summary tables of the analytical data collected during the year; and
- discussions to demonstrate whether the remedial action is meeting the remedial objectives and monitoring requirements, and whether it is protective of human health and the environment.

In addition, a map summarizing the sampling data available for the five monitoring wells (MW-01A, MW-03, MW-103S, MW-105S, and MW-105D) collected in accordance with this Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) will be provided with the annual monitoring report(s). The annual monitoring report will be provided to the U.S. EPA within 45 calendar days of the completion of the last sampling event of each calendar year.

If needed, a Five-Year Report will be prepared at the end of the fifth year from the beginning of monitoring. The content of the Five-Year Report will be determined in consultation with the U.S. EPA and will include the information the U.S. EPA will need to complete portions of the Five-Year Review. In any event, following the successful conclusion of long term monitoring (three consecutive years of monitoring data confirming groundwater concentrations are less than MCLs) a Completion Report will be prepared. The Completion Report will summarize the current Site conditions and the basis for determining that the work is complete. The report will be signed by a professional engineer stating that "to the best of his or her knowledge the remedial

action has been completed in full satisfaction of the requirements of the Consent Decree". In addition, the report will contain the following statement signed by the Settling Defendants' Project Coordinator.

To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

## 10.0 CAPITAL AND OPERATIONS AND MAINTENANCE COST ESTIMATES

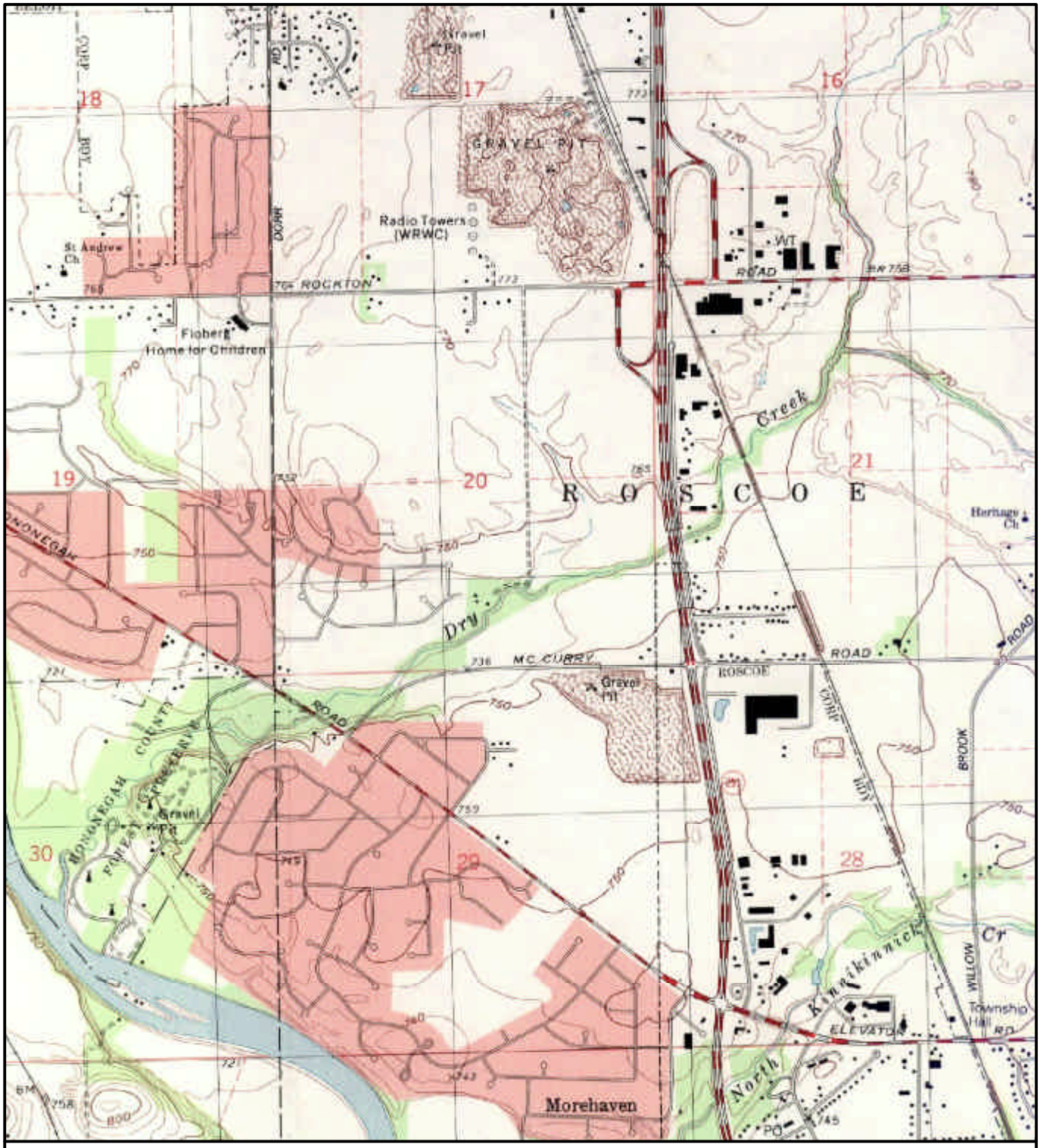
Existing groundwater monitoring wells MW-01A, MW-03, MW-103S, MW-105S, and MW-105D will comprise the monitoring well network for this program. Therefore, no capital expenditures are anticipated for this project. Annual monitoring and reporting costs are estimated at less than $25,000 per year. Annual maintenance costs are estimated at less than $5,000 per year.

## 11.0 PROJECT SCHEDULE

Groundwater samples will be collected in accordance with the Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) on a quarterly basis during the first year of monitoring. Following the first year of quarterly monitoring, additional sampling will be continued at an agreed upon frequency until written notice from the U.S. EPA is received stating that monitoring is no longer necessary. The results of each sampling event will be provided to the U.S. EPA within 45 calendar days of the completion of each sampling event. Annual monitoring reports will be provided to the U.S. EPA within 45 days of the completion of the last quarterly sampling event of the year. In any event, it is anticipated that following receipt of three consecutive years of monitoring data confirming that all groundwater concentrations are less than their respective MCLs, a No Further Remedial Action Planned (NFRAP) determination is warranted. Within 90 days of receipt of final data confirming three consecutive years of monitored groundwater concentrations less than MCLs a Final Completion Report will be submitted to U.S. EPA for its review. The Completion Report will be developed in accordance with the requirements identified by Section 9.0.

## 12.0 CONCLUSION

This Remedial Action Work Plan (Long Term Groundwater Monitoring Plan) is submitted in accordance with Item II Section 3 and Item III Section 2c of the SOW. Implementation of the scope of work set forth herein is consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and is the final Remedial Action for this historical site.




BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE;
SOUTH BELOIT, ILLINOIS 1993

figure 2.1

SITE LOCATION
EVERGREEN MANOR SITE
*Roscoe, Illinois*

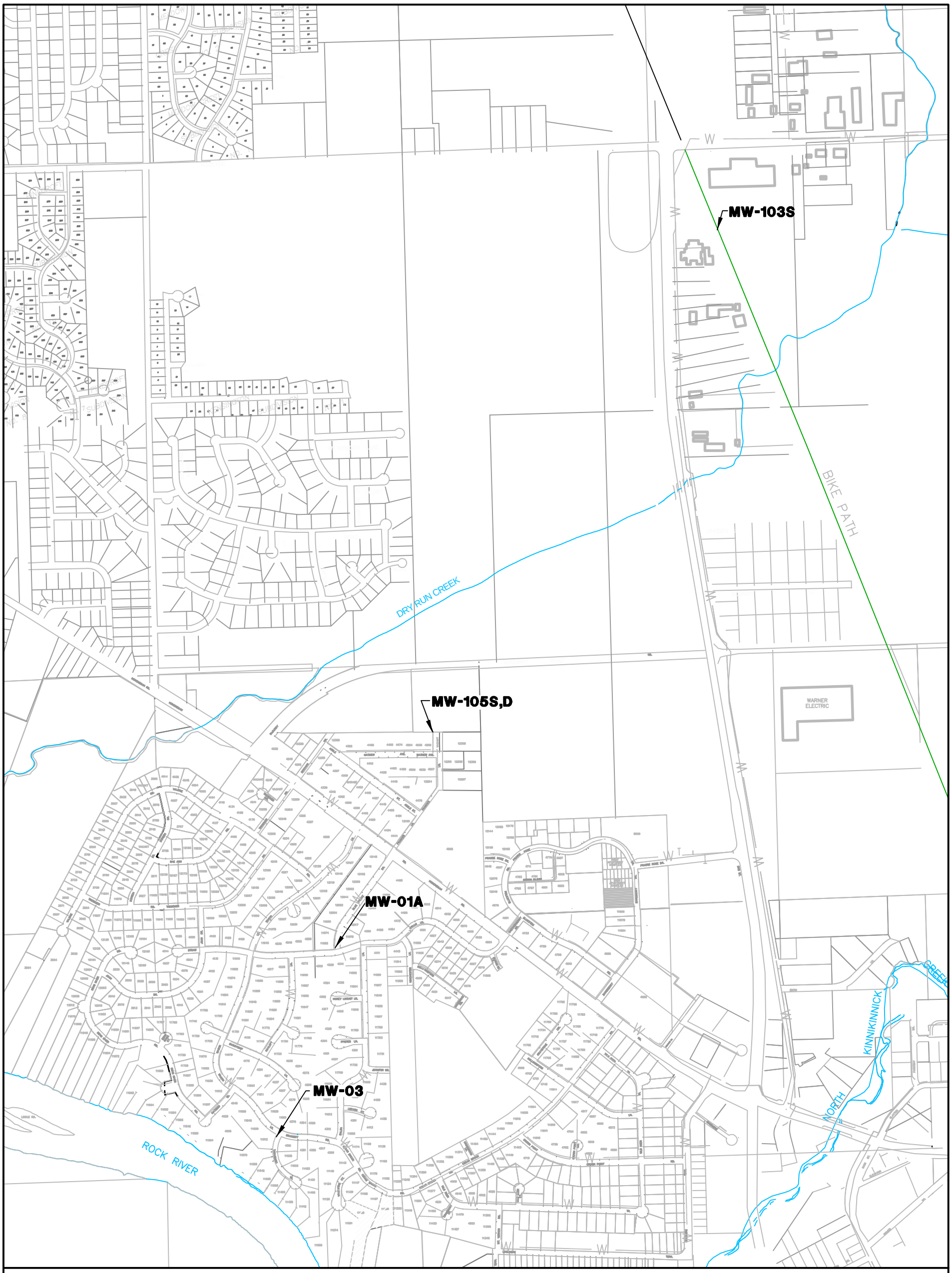



figure 4.1

MONITORING WELL NETWORK
LONG TERM MONITORING PLAN
EVERGREEN MANOR SITE
*Roscoe Township, Illinois*

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